		NTSB ID: CHI98FA119		Aircraft Registration Number: N868FE	
		Occurrence Date: 04/07/1998		Most Critical Injury: Fatal	
		Occurrence Type: Accident		Investigated By: NTSB	
Location/Time					
Nearest City/Place BISMARCK	State ND	Zip Code 58504	Local Time 0838	Time Zone CDT	
Airport Proximity: Off Airport/Airstrip		Distance From Landing Facility: 1		Direction From Airport: 128	
Aircraft Information Summary					
Aircraft Manufacturer Cessna		Model/Series 208B		Type of Aircraft Airplane	
Sightseeing Flight: No			Air Medical Transport Flight: No		
Narrative					
<p>Brief narrative statement of facts, conditions and circumstances pertinent to the accident/incident:</p> <p>HISTORY OF FLIGHT</p> <p>On April 7, 1998, at 0838 central daylight time (cdt), a Cessna 208B, N868FE, registered to Federal Express Corporation, and operated by Corporate Air, of Billings, Montana, as FedEx Flight 8738, was destroyed following a loss of control and collision with the terrain. The airplane was on the ILS approach to Runway 31 at the Bismarck Municipal Airport, Bismarck, North Dakota, when the accident occurred. The commercial pilot received fatal injuries. The 14 CFR Part 135 flight was operating on an IFR flight plan. Instrument meteorological conditions prevailed.</p> <p>The flight departed Grand Forks, North Dakota, at 0728 cdt, with 2,710 pounds of cargo on a regular scheduled flight to Bismarck. Two other Corporate Air flights, also being operated as FedEx cargo flights, departed Grand Forks shortly after N868FE. Both of these airplanes were destined for Bismarck.</p> <p>N868FE was cleared to climb to 6,000 feet mean sea level (msl) after takeoff from Grand Forks. Shortly after takeoff the pilot requested a climb to 8,000 feet msl due to icing. The pilot was issued a climb to 7,000 feet msl. N868FE then contacted Minneapolis Air Route Traffic Control Center and stated to the controller that he was not picking up any more ice at 7,000 feet msl and that he was on top of the clouds. The pilot informed the controller that the ice he had picked up was mixed and that it was like wet droplets running back over the wing and freezing.</p> <p>The pilot of N868FE was instructed to contact Bismarck Approach Control who issued vectors and cleared N868FE for the ILS Runway 31 approach. The pilot then contacted the Bismarck Air Traffic Control Tower and was cleared to land at 0836 cdt. The pilot acknowledged the clearance at 0837 cdt. There was no further radio contact with the N868FE.</p> <p>PERSONNEL INFORMATION</p> <p>The pilot was born December 6, 1956. He was the holder of a commercial pilot certificate with single, multi-engine, and instrument ratings. He also held a second class medical issued on November 14, 1997. The medical certificate contained the limitation that the holder shall wear corrective lenses.</p> <p>A review of the pilot's last logbook revealed his most recent biennial flight review was on December 24, 1997. He had accumulated a total of 2,265 hours of flight time, 18.9 hours of which were in a Cessna 208B airplane at the time of the accident.</p> <p>The pilot had 1.9 hours of actual instrument time in a Cessna 208 and 4.7 hours of simulated instrument time in a Cessna 208.</p>					
FACTUAL REPORT - AVIATION					

National Transportation Safety Board

**FACTUAL REPORT****AVIATION**

NTSB ID: CHI98FA119

Occurrence Date: 04/07/1998

Occurrence Type: Accident

**Narrative (Continued)**

The pilot completed the Flight Safety International Caravan I Initial Pilot Training Course on March 27, 1998.

**AIRCRAFT INFORMATION**

N868FE was a Cessna 208B, serial number 208B0193. The airplane had accumulated 6,140 hours of time in service at the time of the accident. The engine also had 6,140 hours of total time at the time of the accident. The most recent inspection was conducted on February 26, 1998, 45 hours prior to the accident.

**METEOROLOGICAL INFORMATION**

Another Corporate Air pilot departed Grand Forks approximately 5 to 10 minutes after N868FE. His destination was also Bismarck. He stated both flights had filed to fly at 6,000 feet msl. He stated he was cleared to 8,000 feet msl after departure for separation purposes. He reported the tops were at 6,700 feet msl with light mixed icing in the clouds which accumulated to 1/8 to 1/4 inch. He reported hearing the pilot of N868FE request a higher altitude because he was picking up ice at 6,000 feet msl. He stated the pilot of N868FE was cleared to 7,000 feet msl. He recalled center asking the pilot of N868FE if he was out of the ice. The pilot reported that he was now on top and that he had been picking up light mixed ice in the clouds and that some of it was running back and freezing aft on the wing. This pilot stated that en route the tops lowered to about 4,000 feet msl and he was clear of the clouds until he began the descent into Bismarck. He stated he encountered light mixed ice during the approach into Bismarck which had accumulated 1/8 to 1/4 inch. He stated he recalled the ice melting away during the ILS approach.

A third Corporate Air pilot was also flying from Grand Forks to Bismarck around the same time. He stated he also picked up light mixed ice during the departure from Grand Forks so he requested a higher altitude and was subsequently cleared to 8,000 feet msl. He stated that at 7,000 feet msl he was out of the icing conditions, but was still in instrument conditions. By 8,000 feet msl he was between layers. Approximately 35 miles northeast of Bismarck his "...flight conditions deteriorated." He was in instrument conditions at 8,000 feet msl and began picking up light clear/mixed icing during the descent through 7,600 feet msl. He reported he continued to pick up ice through 5,000 feet msl and as he descended through 4,000 feet msl the ice began to melt. He stated that after landing he noted the unprotected areas of his airplane had 3/8 to 1/2 inch of ice on them and the protected areas had approximately 1/4 in of ice. The pilot landed at 0850 cdt.

A pilot, flying a Cessna T210, who departed from Bismarck an hour before the accident stated the weather information forecast the chance of light to occasional moderate icing in clouds between the freezing level and 14,000 feet msl. After departure from Bismarck he encountered cloud bases at about 1,000 feet above the ground (agl) or 2,700 msl. There were several layers of clouds as he departed to the northwest. The lowest layer had a base at 3,500 msl and tops at 6,000 msl. In this layer the outside air temperature was about +2C with liquid precipitation. As the rain hit the leading edge of the wings, it moved back aft of the de-icing boots. The rain started to freeze and stick to the bottom side of both wings. The pilot reported the ice adhered to the left wing from the pitot mast inboard from approximately mid chord, aft to the end of the flaps. From the pitot mast outboard, the ice formed from the trailing edge of the de-icing boots, back to the end of the ailerons. This freezing precipitation ended about 6,000 msl. From approximately 6,000 msl to about 7,000 msl, he was still in IMC with light rime icing. The 1/4 to 1/2 inch of ice did not shed off the wings when the pilot inflated the boots. The pilot recycled the boots two or three times, but the ice remained. He could see the ribs on the boots expanded and ice flex, but the it did not shed off the leading edge of the wings.

Reported weather at Bismarck, at 0840 cdt, was an overcast ceiling at 400 feet, visibility 8 statute miles, wind was from 010 degrees at 12 knots, temperature and dewpoint were both 33 degrees F, and the altimeter was 29.85".

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**FACTUAL REPORT****AVIATION**

NTSB ID: CHI98FA119

Occurrence Date: 04/07/1998

Occurrence Type: Accident

**Narrative** (Continued)**FLIGHT RECORDERS**

The airplane was equipped with a Power Analyzer and Recorder (PAR) unit which is a light weight, compact monitoring system designed to provide the airplane operator with real time performance data and a non-volatile record of engine/airframe performance. The PAR unit accumulates, stores, and outputs the records of all starts, shutdowns, limit exceedences and other specified data for engine conditions checks and trend analysis. See attached PAR Incident Investigation Report for details.

**WRECKAGE AND IMPACT INFORMATION**

The NTSB on-scene investigation began at 1200 on April 8, 1998. The airplane impacted the terrain in an field approximately 1.6 miles from the end of Runway 31. The initial impact ground scar contained pieces of red lens cover from the left wing. The engine contacted the ground shortly thereafter at which point one propeller blade separated. Pieces of the right wing were located in the third ground scar, which was relatively in line with the first ground scar. The engine, cockpit, overhead panel, and the left wing separated from the fuselage shortly after this impact. The main portion of the wreckage came to rest shortly thereafter. The fuselage came to rest inverted along with the right wing and the empennage which separated from the fuselage. The distance between the first ground impact and where the main wreckage came to rest was 102 feet. The wreckage path was on a heading of 250 degrees.

**MEDICAL AND PATHOLOGICAL INFORMATION**

A post mortem examination of the pilot was conducted on April 8, 1998, by the North Dakota Department of Health, Bismarck, North Dakota.

The pilot's toxicological analysis was performed by the Federal Aviation Administration's Civil Aeromedical Institute, Oklahoma City, Oklahoma. The test results were negative for those substances screened.


**TESTS AND RESEARCH**


The engine was inspected and torn down at Executive Air Taxi Corp., Bismarck, North Dakota, on April 8th and 9th, 1998. See attached Engine Teardown Report for details.


The propeller was inspected at DuPage County Airport, West Chicago, Illinois, on August 7, 1998. See attached Propeller Teardown Report for details.


**ADDITIONAL DATA**

Parties to the investigation were the Federal Aviation Administration, Cessna Aircraft Company, United Technologies Pratt & Whitney Canada, Federal Express Corporation, Corporate Air.

 <b>National Transportation Safety Board</b> <b>FACTUAL REPORT</b> <b>AVIATION</b>		NTSB ID: CHI98FA119				
		Occurrence Date: 04/07/1998				
		Occurrence Type: Accident				
Landing Facility/Approach Information						
Airport Name BISMARCK MUNICIPAL		Airport ID: BIS	Airport Elevation 1677 Ft. MSL	Runway Used 31	Runway Length 8794	Runway Width 150
Runway Surface Type: Asphalt						
Runway Surface Condition: Snow--wet						
Type Instrument Approach: ILS-complete						
VFR Approach/Landing: Full Stop						
Aircraft Information						
Aircraft Manufacturer Cessna		Model/Series 208B		Serial Number 208B0193		
Airworthiness Certificate(s): Normal						
Landing Gear Type: Tricycle						
Homebuilt Aircraft? No		Number of Seats: 2	Certified Max Gross Wt. 3997 LBS	Number of Engines: 1		
Engine Type: Turbo Prop		Engine Manufacturer: P&W	Model/Series: PT 6A-114	Rated Power: 600 HP		
- Aircraft Inspection Information						
Type of Last Inspection AAIP		Date of Last Inspection 02/26/1998	Time Since Last Inspection 45 Hours	Airframe Total Time 6140 Hours		
- Emergency Locator Transmitter (ELT) Information						
ELT Installed? Yes		ELT Operated? No	ELT Aided in Locating Accident Site? No			
Owner/Operator Information						
Registered Aircraft Owner  FEDERAL EXPRESS CORPORATION		Street Address 3101 TCHULAHOMA				
		City MEMPHIS	State TN	Zip Code 38118		
Operator of Aircraft  CORPORATE AIR, INC.		Street Address P.O. BOX 30998				
		City BILLINGS	State MT	Zip Code 59107		
Operator Does Business As: FEDERAL EXPRESS				Operator Designator Code: HYSA		
- Type of U.S. Certificate(s) Held:						
Air Carrier Operating Certificate(s): On-demand Air Taxi						
Operating Certificate:			Operator Certificate:			
Regulation Flight Conducted Under: Part 135: Air Taxi & Commuter						
Type of Flight Operation Conducted: Unknown						
FACTUAL REPORT - AVIATION						

 <b>National Transportation Safety Board</b> <b>FACTUAL REPORT</b> <b>AVIATION</b>			NTSB ID: CHI98FA119																																																																																			
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<b>First Pilot Information</b>																																																																																						
Name On File			City On File		State On File	Date of Birth On File	Age 41																																																																															
Sex: M	Seat Occupied: Left		Principal Profession: Civilian Pilot			Certificate Number: On File																																																																																
Certificate(s): Flight Instructor; Commercial																																																																																						
Airplane Rating(s): Multi-engine Land; Single-engine Land																																																																																						
Rotorcraft/Glider/LTA: None																																																																																						
Instrument Rating(s): Airplane																																																																																						
Instructor Rating(s): Airplane Single-engine; Instrument Airplane																																																																																						
Type Rating/Endorsement for Accident/Incident Aircraft? No					Current Biennial Flight Review?																																																																																	
Medical Cert.: Class 2		Medical Cert. Status: Valid Medical--w/ waivers/lim.			Date of Last Medical Exam: 11/14/1997																																																																																	
<table border="1"> <tr> <th rowspan="2">- Flight Time Matrix</th> <th rowspan="2">All A/C</th> <th rowspan="2">This Make and Model</th> <th rowspan="2">Airplane Single Engine</th> <th rowspan="2">Airplane Multi-Engine</th> <th rowspan="2">Night</th> <th colspan="2">Instrument</th> <th rowspan="2">Rotorcraft</th> <th rowspan="2">Glider</th> <th rowspan="2">Lighter Than Air</th> </tr> <tr> <th>Actual</th> <th>Simulated</th> </tr> <tr> <td>Total Time</td> <td>2265</td> <td>19</td> <td>2247</td> <td>20</td> <td>456</td> <td>202</td> <td>57</td> <td></td> <td></td> <td></td> </tr> <tr> <td>Pilot In Command(PIC)</td> <td>2103</td> <td>19</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Instructor</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Last 90 Days</td> <td>71</td> <td>19</td> <td>71</td> <td></td> <td>24</td> <td>20</td> <td>5</td> <td></td> <td></td> <td></td> </tr> <tr> <td>Last 30 Days</td> <td>19</td> <td>19</td> <td>19</td> <td></td> <td>1</td> <td>2</td> <td>3</td> <td></td> <td></td> <td></td> </tr> <tr> <td>Last 24 Hours</td> <td>1</td> <td>1</td> <td>1</td> <td></td> <td>1</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </table>								- Flight Time Matrix	All A/C	This Make and Model	Airplane Single Engine	Airplane Multi-Engine	Night	Instrument		Rotorcraft	Glider	Lighter Than Air	Actual	Simulated	Total Time	2265	19	2247	20	456	202	57				Pilot In Command(PIC)	2103	19									Instructor											Last 90 Days	71	19	71		24	20	5				Last 30 Days	19	19	19		1	2	3				Last 24 Hours	1	1	1		1					
- Flight Time Matrix	All A/C	This Make and Model	Airplane Single Engine	Airplane Multi-Engine	Night	Instrument								Rotorcraft	Glider				Lighter Than Air																																																																			
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Seatbelt Used? Yes		Shoulder Harness Used? Yes			Toxicology Performed? Yes		Second Pilot? No																																																																															
<b>Flight Plan/Itinerary</b>																																																																																						
Type of Flight Plan Filed: IFR																																																																																						
Departure Point		State		Airport Identifier		Departure Time		Time Zone																																																																														
GRAND FORKS		ND		GFK		0728		CDT																																																																														
Destination		State		Airport Identifier																																																																																		
Same as Accident/Incident Location				BIS																																																																																		
Type of Clearance: IFR																																																																																						
Type of Airspace: Class D																																																																																						
<b>Weather Information</b>																																																																																						
Source of Briefing: Company; Flight Service Station																																																																																						
Method of Briefing:																																																																																						

 <b>National Transportation Safety Board</b> <b>FACTUAL REPORT</b> <b>AVIATION</b>			NTSB ID: CHI98FA119		
			Occurrence Date: 04/07/1998		
			Occurrence Type: Accident		
<b>Weather Information</b>					
WOF ID	Observation Time	Time Zone	WOF Elevation	WOF Distance From Accident Site	Direction From Accident Site
BIS	0840	CDT	1677 Ft. MSL	1 NM	128 Deg. Mag.
Sky/Lowest Cloud Condition: Unknown			0 Ft. AGL	Condition of Light: Dawn	
Lowest Ceiling: Overcast			400 Ft. AGL	Visibility: 8 SM	Altimeter: 29.00 "Hg
Temperature: 1 °C	Dew Point: 1 °C	Wind Direction: 10		Density Altitude: 457 Ft.	
Wind Speed: 12	Gusts:	Weather Conditions at Accident Site: Instrument Conditions			
Visibility (RVR): 0 Ft.	Visibility (RVV) 0 SM	Intensity of Precipitation: Moderate			
Restrictions to Visibility: None					
Type of Precipitation: Snow Shower; Freezing Rain					
<b>Accident Information</b>					
Aircraft Damage:		Aircraft Fire:		Aircraft Explosion	
Classification:					
- Injury Summary Matrix	Fatal	Serious	Minor	None	TOTAL
First Pilot	1				1
Second Pilot					
Student Pilot					
Flight Instructor					
Check Pilot					
Flight Engineer					
Cabin Attendants					
Other Crew					
Passengers					
- TOTAL ABOARD -	1				1
Other Ground	0	0	0		0
- GRAND TOTAL -	1	0	0		1

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	Occurrence Date: 04/07/1998	
	Occurrence Type: Accident	
Administrative Information		
Investigator-In-Charge (IIC) TODD J. CARLSON		
Additional Persons Participating in This Accident/Incident Investigation:  VERL W ADDISON 1801 23TH AVE N. FARGO, ND 58102  LEAH D RIDDLE ONE CESSNA BOULEVARD WICHITA, KS 67215  THOMAS A BERTHE 15 EAGLE DRIVE S. BURLINGTON, VT 05403  ROBERT D MCIVER P.O. BOX 30998 BILLINGS, MT 59107		
FACTUAL REPORT - AVIATION		